WEST Search History

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DATE: Sunday, August 08, 2004

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☐	L9	l3 and eliminat$3 near3 compress$3	26
☐	L8	L4 not l7	7
☐	L7	L4 and compress$3	85
☐	L6	L4 and wihout near3 compress$3	0
☐	L5	L4 and wihout near3 compression	0
☐	L4	L3 and air separat$3	92
☐	L3	L2 and methanol	431
☐	L2	L1 and (synthesis gas or hydrogen near1 carbon monoxide)	929
☐	L1	(feedstock or methane or natural gas) with oxygen with steam	1611

END OF SEARCH HISTORY

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NEWS 4	May 12	Polymer links for the POLYLINK command completed in REGISTRY
NEWS 5	May 27	New UPM (Update Code Maximum) field for more efficient patent SDIs in CAplus
NEWS 6	May 27	CAplus super roles and document types searchable in REGISTRY
NEWS 7	Jun 28	Additional enzyme-catalyzed reactions added to CASREACT
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NEWS 9	Jul 12	BEILSTEIN enhanced with new display and select options, resulting in a closer connection to BABS
NEWS 10	Jul 30	BEILSTEIN on STN workshop to be held August 24 in conjunction with the 228th ACS National Meeting
NEWS 11	AUG 02	IFIPAT/IFIUDB/IFICDB reloaded with new search and display fields
NEWS 12	AUG 02	CAplus and CA patent records enhanced with European and Japan Patent Office Classifications
NEWS 13	AUG 02	STN User Update to be held August 22 in conjunction with the 228th ACS National Meeting
NEWS 14	AUG 02	The Analysis Edition of STN Express with Discover! (Version 7.01 for Windows) now available
NEWS 15	AUG 04	Pricing for the Save Answers for SciFinder Wizard within STN Express with Discover! will change September 1, 2004

NEWS EXPRESS	JULY 30 CURRENT WINDOWS VERSION IS V7.01, CURRENT MACINTOSH VERSION IS V6.0c(ENG) AND V6.0Jc(JP), AND CURRENT DISCOVER FILE IS DATED 26 APRIL 2004
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=> file caplus

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                                                           ENTRY    SESSION
FULL ESTIMATED COST                                         0.21       0.21

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FILE COVERS 1907 - 8 Aug 2004  VOL 141 ISS 7
FILE LAST UPDATED: 6 Aug 2004  (20040806/ED)

  This file contains CAS Registry Numbers for easy and accurate
  substance identification.


=> s (feedstock or methane or natural gas)(1) oxygen
         14545 FEEDSTOCK
          7072 FEEDSTOCKS
         19144 FEEDSTOCK
                 (FEEDSTOCK OR FEEDSTOCKS)
        154256 METHANE
          3209 METHANES
        155607 METHANE
                 (METHANE OR METHANES)
        620091 NATURAL
            31 NATURALS
        620109 NATURAL
                 (NATURAL OR NATURALS)
       1370848 GAS
        472074 GASES
       1540175 GAS
                 (GAS OR GASES)
         64541 NATURAL GAS
                 (NATURAL(W)GAS)
        644072 OXYGEN
          6302 OXYGENS
        648473 OXYGEN
                 (OXYGEN OR OXYGENS)
L1        9166 (FEEDSTOCK OR METHANE OR NATURAL GAS)(L) OXYGEN

=> s l1 and (synthesis gas or hydrogen (1a) carbon monoxide)
       1132963 SYNTHESIS
             3 SYNTHESISES
         62143 SYNTHESES
       1168193 SYNTHESIS
                 (SYNTHESIS OR SYNTHESISES OR SYNTHESES)
       1370848 GAS
        472074 GASES
       1540175 GAS
                 (GAS OR GASES)
         14650 SYNTHESIS GAS
                 (SYNTHESIS(W)GAS)
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         829733 HYDROGEN
           5395 HYDROGENS
         832761 HYDROGEN
                  (HYDROGEN OR HYDROGENS)
        1067620 CARBON
          23758 CARBONS
        1076281 CARBON
                  (CARBON OR CARBONS)
         160074 MONOXIDE
            959 MONOXIDES
         160584 MONOXIDE
                  (MONOXIDE OR MONOXIDES)
         135270 CARBON MONOXIDE
                  (CARBON(W)MONOXIDE)
           9365 HYDROGEN (1A) CARBON MONOXIDE
L2           817 L1 AND (SYNTHESIS GAS OR HYDROGEN (1A) CARBON MONOXIDE)

=> s l2 and air separat?
         844194 AIR
            252 AIRS
         844312 AIR
                  (AIR OR AIRS)
         307558 SEPARAT?
         257154 SEP
          12496 SEPS
         268485 SEP
                  (SEP OR SEPS)
         429010 SEPD
              3 SEPDS
         429013 SEPD
                  (SEPD OR SEPDS)
          84609 SEPG
              1 SEPGS
          84610 SEPG
                  (SEPG OR SEPGS)
         528012 SEPN
          34084 SEPNS
         545216 SEPN
                  (SEPN OR SEPNS)
        1284872 SEPARAT?
                  (SEPARAT? OR SEP OR SEPD OR SEPG OR SEPN)
           4116 AIR SEPARAT?
                  (AIR(W)SEPARAT?)
L3           27 L2 AND AIR SEPARAT?

=> s l3 and dimethyl ether
         322281 DIMETHYL
             38 DIMETHYLS
         322299 DIMETHYL
                  (DIMETHYL OR DIMETHYLS)
         448361 ETHER
         138026 ETHERS
         505171 ETHER
                  (ETHER OR ETHERS)
          10226 DIMETHYL ETHER
                  (DIMETHYL(W)ETHER)
L4             2 L3 AND DIMETHYL ETHER

=> d l4 ibib ab 1-2

L4   ANSWER 1 OF 2  CAPLUS  COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER:         2003:173864  CAPLUS
DOCUMENT NUMBER:          138:223963
TITLE:                    Air separation plant integrated
```

with gasflood petroleum recovery and fuel manufacture

INVENTOR(S): Olsvik, Ola; Rytter, Erling; Sogge, Jostein; Kvale, Rune; Haugen, Sjur; Grontvedt, Jan

PATENT ASSIGNEE(S): Statoil ASA, Norway

SOURCE: PCT Int. Appl., 28 pp.
CODEN: PIXXD2

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2003018958	A1	20030306	WO 2001-NO356	20010831
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PH, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM				
RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG				
WO 2003018959	A1	20030306	WO 2002-NO305	20020830
W: AE, AG, AL, AM, AT, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, CZ, DE, DE, DK, DK, DM, DZ, EC, EE, EE, ES, FI, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO				
RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG				
EP 1434926	A1	20040707	EP 2002-758957	20020830
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, SK				

PRIORITY APPLN. INFO.: WO 2001-NO356 A 20010831
WO 2002-NO305 W 20020830

AB An **air sepn.** unit is integrated with enhanced (gasflood) petroleum recovery and **synthesis gas** manufacture for the integrated **natural gas**-based production of methanol or hydrocarbons with petroleum recovery. Air is first separated to produce a nitrogen-rich fraction, which is suitable for downhole injection, and an **oxygen**-rich fraction, which is led to an autothermal reforming unit for conversion of **natural gas** to **synthesis gas**. The **synthesis gas** can then be used as a **feedstock** for the synthesis of methanol, other oxygenated hydrocarbons (e.g., di-Me ether), or higher hydrocarbons in a synthesis loop. Waste gas from the synthesis loop can be burned at elevated pressure to provide process heat. Carbon dioxide can be separated from the waste gas combustion products.

REFERENCE COUNT: 5 THERE ARE 5 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4 ANSWER 2 OF 2 CAPLUS COPYRIGHT 2004 ACS on STN

ACCESSION NUMBER: 2000:759044 CAPLUS

DOCUMENT NUMBER: 134:73537

TITLE: "Generation of **synthesis gas** off-shore: oxygen supply and opportunities for integration with GTL technologies"

AUTHOR(S): Kalbassi, Mohammad A.; Brown, Dennis M.; Armstrong, Phillip A.

CORPORATE SOURCE: Air Products PLC, Walton-on-Thames, UK

SOURCE: Cryogenics '98, IIR International Conference,

Proceedings, 5th, Praha, Czech Republic, May 12-15, 1998 (1998), Meeting Date 1998, 147-154. ICARIS Ltd.: Prague, Czech Rep.
CODEN: 69ANYW
DOCUMENT TYPE: Conference; General Review
LANGUAGE: English
AB A review, with 11 refs., of small-scale ship-based cryogenic **air sepn.** units (using Air Products technol.) for **oxygen** manufacture in the offshore (ship-based) conversion of remote **natural gas** (via **oxygen**-based steam reforming) to transportable liqs. Topics discussed include technologies for **synthesis gas** generation and gas-to-liqs. (GTL) conversion (e.g., Fischer-Tropsch reaction, methanol synthesis, and di-Me ether synthesis), **oxygen** supply at sea, shipboard safety requirements (e.g., based on vertical and tilt motions onboard ships during heavy waves or under storm conditions, etc.), process design in off-shore **oxygen** plants, design and operation of packed distillation columns, **oxygen** plant performance, and performance of swaying packed columns.
REFERENCE COUNT: 11 THERE ARE 11 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

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NEWS 15	AUG 04	Pricing for the Save Answers for SciFinder Wizard within STN Express with Discover! will change September 1, 2004

NEWS EXPRESS	JULY 30 CURRENT WINDOWS VERSION IS V7.01, CURRENT MACINTOSH VERSION IS V6.0c(ENG) AND V6.0Jc(JP), AND CURRENT DISCOVER FILE IS DATED 26 APRIL 2004
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                                                           ENTRY     SESSION
FULL ESTIMATED COST                                         0.21        0.21

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FILE COVERS 1907 - 8 Aug 2004  VOL 141 ISS 7
FILE LAST UPDATED: 6 Aug 2004  (20040806/ED)

  This file contains CAS Registry Numbers for easy and accurate
  substance identification.


=> s (feedstock or methane or natural gas)(1) oxygen
         14545 FEEDSTOCK
          7072 FEEDSTOCKS
         19144 FEEDSTOCK
                 (FEEDSTOCK OR FEEDSTOCKS)
        154256 METHANE
          3209 METHANES
        155607 METHANE
                 (METHANE OR METHANES)
        620091 NATURAL
            31 NATURALS
        620109 NATURAL
                 (NATURAL OR NATURALS)
       1370848 GAS
        472074 GASES
       1540175 GAS
                 (GAS OR GASES)
         64541 NATURAL GAS
                 (NATURAL(W)GAS)
        644072 OXYGEN
          6302 OXYGENS
        648473 OXYGEN
                 (OXYGEN OR OXYGENS)
L1        9166 (FEEDSTOCK OR METHANE OR NATURAL GAS)(L) OXYGEN

=> s l1 and (synthesis gas or hydrogen (1a) carbon monoxide)
       1132963 SYNTHESIS
             3 SYNTHESISES
         62143 SYNTHESES
       1168193 SYNTHESIS
                 (SYNTHESIS OR SYNTHESISES OR SYNTHESES)
       1370848 GAS
        472074 GASES
       1540175 GAS
                 (GAS OR GASES)
         14650 SYNTHESIS GAS
                 (SYNTHESIS(W)GAS)
```

```
         829733 HYDROGEN
           5395 HYDROGENS
         832761 HYDROGEN
                  (HYDROGEN OR HYDROGENS)
        1067620 CARBON
          23758 CARBONS
        1076281 CARBON
                  (CARBON OR CARBONS)
         160074 MONOXIDE
            959 MONOXIDES
         160584 MONOXIDE
                  (MONOXIDE OR MONOXIDES)
         135270 CARBON MONOXIDE
                  (CARBON(W)MONOXIDE)
           9365 HYDROGEN (1A) CARBON MONOXIDE
L2           817 L1 AND (SYNTHESIS GAS OR HYDROGEN (1A) CARBON MONOXIDE)

=> s l2 and air separat?
         844194 AIR
            252 AIRS
         844312 AIR
                  (AIR OR AIRS)
         307558 SEPARAT?
         257154 SEP
          12496 SEPS
         268485 SEP
                  (SEP OR SEPS)
         429010 SEPD
              3 SEPDS
         429013 SEPD
                  (SEPD OR SEPDS)
          84609 SEPG
              1 SEPGS
          84610 SEPG
                  (SEPG OR SEPGS)
         528012 SEPN
          34084 SEPNS
         545216 SEPN
                  (SEPN OR SEPNS)
        1284872 SEPARAT?
                  (SEPARAT? OR SEP OR SEPD OR SEPG OR SEPN)
           4116 AIR SEPARAT?
                  (AIR(W)SEPARAT?)
L3            27 L2 AND AIR SEPARAT?

=> s l3 and dimethyl ether
         322281 DIMETHYL
             38 DIMETHYLS
         322299 DIMETHYL
                  (DIMETHYL OR DIMETHYLS)
         448361 ETHER
         138026 ETHERS
         505171 ETHER
                  (ETHER OR ETHERS)
          10226 DIMETHYL ETHER
                  (DIMETHYL(W)ETHER)
L4             2 L3 AND DIMETHYL ETHER

=> d l4 ibib ab 1-2

L4   ANSWER 1 OF 2  CAPLUS  COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER:        2003:173864 CAPLUS
DOCUMENT NUMBER:         138:223963
TITLE:                   Air separation plant integrated
```

with gasflood petroleum recovery and fuel manufacture

INVENTOR(S): Olsvik, Ola; Rytter, Erling; Sogge, Jostein; Kvale, Rune; Haugen, Sjur; Grontvedt, Jan

PATENT ASSIGNEE(S): Statoil ASA, Norway

SOURCE: PCT Int. Appl., 28 pp.
CODEN: PIXXD2

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2003018958	A1	20030306	WO 2001-NO356	20010831
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PH, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM				
RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG				
WO 2003018959	A1	20030306	WO 2002-NO305	20020830
W: AE, AG, AL, AM, AT, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, CZ, DE, DE, DK, DK, DM, DZ, EC, EE, EE, ES, FI, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO				
RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG				
EP 1434926	A1	20040707	EP 2002-758957	20020830
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, SK				

PRIORITY APPLN. INFO.:

WO 2001-NO356	A	20010831
WO 2002-NO305	W	20020830

AB An **air sepn.** unit is integrated with enhanced (gasflood) petroleum recovery and **synthesis gas** manufacture for the integrated **natural gas**-based production of methanol or hydrocarbons with petroleum recovery. Air is first separated to produce a nitrogen-rich fraction, which is suitable for downhole injection, and an **oxygen**-rich fraction, which is led to an autothermal reforming unit for conversion of **natural gas** to **synthesis gas**. The **synthesis gas** can then be used as a **feedstock** for the synthesis of methanol, other oxygenated hydrocarbons (e.g., di-Me ether), or higher hydrocarbons in a synthesis loop. Waste gas from the synthesis loop can be burned at elevated pressure to provide process heat. Carbon dioxide can be separated from the waste gas combustion products.

REFERENCE COUNT: 5 THERE ARE 5 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4 ANSWER 2 OF 2 CAPLUS COPYRIGHT 2004 ACS on STN

ACCESSION NUMBER: 2000:759044 CAPLUS

DOCUMENT NUMBER: 134:73537

TITLE: "Generation of **synthesis gas** off-shore: oxygen supply and opportunities for integration with GTL technologies"

AUTHOR(S): Kalbassi, Mohammad A.; Brown, Dennis M.; Armstrong, Phillip A.

CORPORATE SOURCE: Air Products PLC, Walton-on-Thames, UK

SOURCE: Cryogenics '98, IIR International Conference,

Proceedings, 5th, Praha, Czech Republic, May 12-15, 1998 (1998), Meeting Date 1998, 147-154. ICARIS Ltd.: Prague, Czech Rep.
CODEN: 69ANYW
DOCUMENT TYPE: Conference; General Review
LANGUAGE: English
AB A review, with 11 refs., of small-scale ship-based cryogenic **air sepn.** units (using Air Products technol.) for **oxygen** manufacture in the offshore (ship-based) conversion of remote **natural gas** (via **oxygen**-based steam reforming) to transportable liqs. Topics discussed include technologies for **synthesis gas** generation and gas-to-liqs. (GTL) conversion (e.g., Fischer-Tropsch reaction, methanol synthesis, and di-Me ether synthesis), **oxygen** supply at sea, shipboard safety requirements (e.g., based on vertical and tilt motions onboard ships during heavy waves or under storm conditions, etc.), process design in off-shore **oxygen** plants, design and operation of packed distillation columns, **oxygen** plant performance, and performance of swaying packed columns.
REFERENCE COUNT: 11 THERE ARE 11 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

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(FILE 'HOME' ENTERED AT 13:39:18 ON 08 AUG 2004)

FILE 'CAPLUS' ENTERED AT 13:40:01 ON 08 AUG 2004
L1 9166 S (FEEDSTOCK OR METHANE OR NATURAL GAS)(L) OXYGEN
L2 817 S L1 AND (SYNTHESIS GAS OR HYDROGEN (1A) CARBON MONOXIDE)
L3 27 S L2 AND AIR SEPARAT?
L4 2 S L3 AND DIMETHYL ETHER

=> s l2 and air (1a) separat?
844194 AIR
252 AIRS
844312 AIR
(AIR OR AIRS)
307558 SEPARAT?
257154 SEP
12496 SEPS
268485 SEP
(SEP OR SEPS)
429010 SEPD
3 SEPDS
429013 SEPD
(SEPD OR SEPDS)
84609 SEPG
1 SEPGS
84610 SEPG
(SEPG OR SEPGS)
528012 SEPN
34084 SEPNS
545216 SEPN
(SEPN OR SEPNS)
1284872 SEPARAT?
(SEPARAT? OR SEP OR SEPD OR SEPG OR SEPN)
7870 AIR (1A) SEPARAT?
L5 38 L2 AND AIR (1A) SEPARAT?

=> d l5 and methanol
'AND' IS NOT A VALID FORMAT FOR FILE 'CAPLUS'
'METHANOL' IS NOT A VALID FORMAT FOR FILE 'CAPLUS'

The following are valid formats:

(METHANOL OR METHANOLS)
L6 8 L5 AND METHANOL

=> d l6 ibib ab 1-8

L6 ANSWER 1 OF 8 CAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 2003:931270 CAPLUS
DOCUMENT NUMBER: 139:367285
TITLE: Integrated process for making acetic acid and **methanol** from syngas
INVENTOR(S): Thiebaut, Daniel Marcel
PATENT ASSIGNEE(S): Acetex (Cyprus) Limited, Cyprus
SOURCE: PCT Int. Appl., 26 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2003097523	A2	20031127	WO 2003-CY2	20030520
WO 2003097523	A3	20040429		

W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM
RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG

PRIORITY APPLN. INFO.: US 2002-319258P P 20020520
US 2003-319918P P 20030130

AB For the manufacture of **methanol** and acetic acid syngas is produced by converting a hydrocarbon feed, steam, and **oxygen** in a an autothermal reformer at 20-80 bars and 800-1250°. The hydrocarbon feed is obtained by hydrogenation of a **natural gas** feed containing higher hydrocarbons in the presence of a hydrogenation catalyst to produce a stream lean in higher hydrocarbons. The produced unadjusted syngas is separated into a H2-rich stream, a CO-rich stream, and a CO2-rich stream and an adjusted syngas is prepared having a ratio R=[H2-CO2]/[CO+CO2] of 2.0-2.9 by combining appropriate portions of the separated gas streams. Any recovered CO2 not used to adjust the R ratio of the unadjusted syngas can be supplied to the reformer to enhance CO production The adjusted syngas is fed to a **methanol** synthesis loop. At least a portion of the recovered CO is reacted with the produced **methanol** to produce acetic acid, acetic anhydride, Me formate, Me acetate, or their mixts. The autothermal reformer is equipped with an **air sepn**. unit to produce **oxygen**. The syngas separation unit includes a solvent absorber and a stripper for CO2 recovery and a cryogenic distillation unit for CO and H2 recovery.

L6 ANSWER 2 OF 8 CAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 2003:173864 CAPLUS
DOCUMENT NUMBER: 138:223963
TITLE: **Air separation** plant integrated with gasflood petroleum recovery and fuel manufacture
INVENTOR(S): Olsvik, Ola; Rytter, Erling; Sogge, Jostein; Kvale, Rune; Haugen, Sjur; Grontvedt, Jan
PATENT ASSIGNEE(S): Statoil ASA, Norway
SOURCE: PCT Int. Appl., 28 pp.

CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2003018958	A1	20030306	WO 2001-NO356	20010831
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PH, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM				
RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG				
WO 2003018959	A1	20030306	WO 2002-NO305	20020830
W: AE, AG, AL, AM, AT, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, CZ, DE, DE, DK, DK, DM, DZ, EC, EE, EE, ES, FI, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO				
RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG				
EP 1434926	A1	20040707	EP 2002-758957	20020830
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, SK				

PRIORITY APPLN. INFO.: WO 2001-NO356 A 20010831
WO 2002-NO305 W 20020830

AB An **air sepn.** unit is integrated with enhanced (gasflood) petroleum recovery and **synthesis gas** manufacture for the integrated **natural gas**-based production of **methanol** or hydrocarbons with petroleum recovery. Air is first separated to produce a nitrogen-rich fraction, which is suitable for downhole injection, and an **oxygen**-rich fraction, which is led to an autothermal reforming unit for conversion of **natural gas** to **synthesis gas**. The **synthesis gas** can then be used as a **feedstock** for the synthesis of **methanol**, other oxygenated hydrocarbons (e.g., di-Me ether), or higher hydrocarbons in a synthesis loop. Waste gas from the synthesis loop can be burned at elevated pressure to provide process heat. Carbon dioxide can be separated from the waste gas combustion products.

REFERENCE COUNT: 5 THERE ARE 5 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L6 ANSWER 3 OF 8 CAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 2001:416405 CAPLUS
DOCUMENT NUMBER: 135:21534
TITLE: Partial oxidation reactor coupled with heat exchangers for manufacture of hydrogen from naphtha or **methanol** feedstocks
INVENTOR(S): Docter, Andreas; Poschmann, Thomas; Sommer, Marc; Wieland, Steffen
PATENT ASSIGNEE(S): Daimlerchrysler A.-G., Germany
SOURCE: Ger., 8 pp.
CODEN: GWXXAW
DOCUMENT TYPE: Patent
LANGUAGE: German
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
DE 19954981	C1	20010607	DE 1999-19954981	19991116
PRIORITY APPLN. INFO.:			DE 1999-19954981	19991116

AB A heat exchanger is coupled with an autothermal reactor (or a partial oxidation reactor) and an **oxygen** separation unit for partial oxidation-reforming of a hydrocarbon **feedstock** (or hydrocarbon-type **feedstock**). The hot product gases (initially, **synthesis gas**, that later undergoes a high-temperature shift reaction) are used to provide heat to heat the incoming feedstreams (the carbon source as well as the **oxygen** feedstream) and to provide heat for the **oxygen** separation unit (such as to provide hot steam for various cleaning steps). The method is especially useful for production of hydrogen for a fuel cell assembly.

L6 ANSWER 4 OF 8 CAPLUS COPYRIGHT 2004 ACS on STN

ACCESSION NUMBER:	2001:351501 CAPLUS
DOCUMENT NUMBER:	135:21710
TITLE:	Syngas production for gas-to-liquids applications: technologies, issues and outlook
AUTHOR(S):	Wilhelm, D. J.; Simbeck, D. R.; Karp, A. D.; Dickenson, R. L.
CORPORATE SOURCE:	SFA Pacific, Inc., Mountain View, CA, 94041, USA
SOURCE:	Fuel Processing Technology (2001), 71(1-3), 139-148 CODEN: FPTEDY; ISSN: 0378-3820
PUBLISHER:	Elsevier Science B.V.
DOCUMENT TYPE:	Journal
LANGUAGE:	English

AB The main gas-to-liqs. (GTL) interest now is in Fischer-Tropsch (F-T) synthesis of hydrocarbons. While **synthesis gas** (syngas) for GTL can be produced from any carbon-based **feedstock** (hydrocarbons, coal, petroleum coke, biomass), the lowest cost routes to syngas so far are based on **natural gas**. Thus, the focus for GTL has been largely on associated gas, so-called stranded or remotely located gas reserves, and larger gas reserves that are not currently being economically exploited. The principal technologies for producing syngas from **natural gas** are: catalytic steam **methane** reforming (SMR), two-step reforming, autothermal reforming (ATR), partial oxidation (POX), and heat exchange reforming. The distinguishing characteristics of these technologies and their com. uses are discussed. Ongoing R&D efforts to develop lower-cost syngas generation technologies are also briefly discussed. Relevant com. experience with large-scale syngas generation for GTL is also discussed. As a frame of reference, in terms of syngas flow rates, a 20,000 b/day F-T plant would be comparable to three 2500 mt/day **methanol** plants. Single-train **methanol** plants are now producing more than 2500 t/day-and plants approaching 3000 mt/day have been announced. The projected relative economies of scale of the various syngas production technologies indicate that two-step reforming and ultimately, ATR, should be the technologies of choice for large-scale GTL plants. Nevertheless, for a 20,000 b/day F-T liqs. plant, capital charges still dominate the manufacturing costs. Syngas production (**oxygen** plant and reforming) comprises half of the total capital cost of this size GTL plant. While air-blown reforming eliminates the expensive **oxygen** plant, air-blown reforming is unlikely to be competitive with, or offer the flexibility of, **oxygen**-blown reforming. The reasons for this conclusion are discussed. The proposed and future GTL facilities should be substantially less costly than their very expensive predecessors-as the result of improvements in FT catalyst and reactor design, the most significant of which have been pioneered by Sasol. In the absence of a breakthrough technol., economy of scale will be the only significant mechanism by which GTL can achieve greater economic viability. However,

even with such further cost redns., the economic viability of GTL plants will remain confined to special situations until crude price levels rise substantially. In the long term, if a ceramic membrane reactor (combining **air sepn.** and partial oxidation) can be developed that enables the 20% reduction in GTL investment costs that the R&D effort is targeting, GTL could become economically viable at crude prices below US20/b.

REFERENCE COUNT: 8 THERE ARE 8 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L6 ANSWER 5 OF 8 CAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 2001:338470 CAPLUS
DOCUMENT NUMBER: 134:328210
TITLE: **Methanol** plant retrofit for the manufacture of acetic acid
INVENTOR(S): Thiebaut, Daniel Marcel; Vidalin, Kenneth Ebennes
PATENT ASSIGNEE(S): Acetex (Cyprus) Limited, Cyprus
SOURCE: PCT Int. Appl., 44 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 2
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2001032594	A1	20010510	WO 2000-CY4	20001031
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM				
RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG				
US 6274096	B1	20010814	US 1999-430888	19991101
US 6232352	B1	20010515	US 2000-547831	20000412
EP 1226103	A1	20020731	EP 2000-972559	20001031
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL				
NZ 519314	A	20031031	NZ 2000-519314	20001031
NO 2002002063	A	20020626	NO 2002-2063	20020430

PRIORITY APPLN. INFO.:

US 1999-430888	A	19991101
US 2000-547831	A	20000412
WO 2000-CY4	W	20001031

AB The retrofitting of an existing **methanol** or **methanol** /ammonia plant to make acetic acid is disclosed. The existing plant has a reformer to which **natural gas** or another hydrocarbon and steam (water) are fed and **synthesis gas** produced. All or part of the **synthesis gas** is processed to sep. out carbon dioxide, **carbon monoxide**, and **hydrogen**, and the separated carbon dioxide is fed either to the existing **methanol** synthesis loop for **methanol** synthesis, or back into the feed to the reformer to enhance the amount of carbon monoxide formation in the **synthesis gas**. Any remaining **synthesis gas** not fed to the carbon dioxide separator can be converted to **methanol** in the existing **methanol** synthesis loop along with carbon dioxide from the separator and/or imported carbon dioxide, and hydrogen from the separator. The separated carbon monoxide is then reacted with the **methanol** to produce acetic acid or an acetic acid precursor by a conventional process. Also disclosed is the reaction of separated hydrogen with nitrogen, in a conventional manner, to produce ammonia and the reaction of a portion of

the acetic acid in a conventional manner with **oxygen** and ethylene to form vinyl acetate. The nitrogen for the added ammonia capacity in a retrofit of an original **methanol** plant comprising an ammonia synthesis loop and the **oxygen** for the vinyl acetate process are obtained from a new **air sepn**. unit; process flow diagrams are presented.

REFERENCE COUNT: 3 THERE ARE 3 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L6 ANSWER 6 OF 8 CAPLUS COPYRIGHT 2004 ACS on STN

ACCESSION NUMBER: 2001:115248 CAPLUS
DOCUMENT NUMBER: 134:165467
TITLE: Integrated process for converting hydrocarbon gas to liquids
INVENTOR(S): Gieskes, Thomas
PATENT ASSIGNEE(S): Atlantic Richfield Company, USA
SOURCE: PCT Int. Appl., 38 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.		DATE
WO 2001010979	A1	20010215	WO 2000-US21352		20000804
W: AE, AU, ID, TT					
RW: AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE					
US 6248794	B1	20010619	US 1999-369045		19990805
EP 1204717	A1	20020515	EP 2000-955374		20000804
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL					
EG 22777	A	20030831	EG 2000-1013		20000805
PRIORITY APPLN. INFO.:			US 1999-369045	A	19990805
			WO 2000-US21352	W	20000804

AB In a first embodiment, a Fischer-Tropsch (FT) process is integrated with a cryogenic liquefied **natural gas** (LNG) process wherein tail gas from (FT) reaction is used to drive a refrigeration compressor in the (LNG) process. The process may be further integrated with a fertilizer production process comprising an ammonia synthesis process and a urea synthesis process. To produce ammonia, hydrogen separated from **synthesis gas** produced in a primary and/or secondary reformer in the (FT) process is combined with nitrogen produced in the (LNG) process. Nitrogen may also be supplied to the ammonia synthesis process from an optional **air sepn**. process, which also provides **oxygen** enrichment to the thermal reformer in the (FT) process. The produce urea, the ammonia is subsequently reacted with carbon dioxide removed during processing of the gas prior to its liquefaction. In an alternative embodiment, an (FT) process is integrated with a **methanol** synthesis process wherein tail gas from the (FT) reaction is used to fuel burners in a secondary thermal reformer.

REFERENCE COUNT: 4 THERE ARE 4 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L6 ANSWER 7 OF 8 CAPLUS COPYRIGHT 2004 ACS on STN

ACCESSION NUMBER: 2000:759044 CAPLUS
DOCUMENT NUMBER: 134:73537
TITLE: "Generation of **synthesis gas** off-shore: oxygen supply and opportunities for integration with GTL technologies"
AUTHOR(S): Kalbassi, Mohammad A.; Brown, Dennis M.; Armstrong, Phillip A.
CORPORATE SOURCE: Air Products PLC, Walton-on-Thames, UK

SOURCE: Cryogenics '98, IIR International Conference, Proceedings, 5th, Praha, Czech Republic, May 12-15, 1998 (1998), Meeting Date 1998, 147-154. ICARIS Ltd.: Prague, Czech Rep.
CODEN: 69ANYW
DOCUMENT TYPE: Conference; General Review
LANGUAGE: English
AB A review, with 11 refs., of small-scale ship-based cryogenic **air sepn.** units (using Air Products technol.) for **oxygen** manufacture in the offshore (ship-based) conversion of remote **natural gas** (via **oxygen**-based steam reforming) to transportable liqs. Topics discussed include technologies for **synthesis gas** generation and gas-to-liqs. (GTL) conversion (e.g., Fischer-Tropsch reaction, **methanol** synthesis, and di-Me ether synthesis), **oxygen** supply at sea, shipboard safety requirements (e.g., based on vertical and tilt motions onboard ships during heavy waves or under storm conditions, etc.), process design in off-shore **oxygen** plants, design and operation of packed distillation columns, **oxygen** plant performance, and performance of swaying packed columns.
REFERENCE COUNT: 11 THERE ARE 11 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L6 ANSWER 8 OF 8 CAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 1999:460256 CAPLUS
DOCUMENT NUMBER: 131:89808
TITLE: Integration of a cryogenic **air separator** with **synthesis gas** production and conversion
INVENTOR(S): Allam, Rodney John; Sheldon, Angela
PATENT ASSIGNEE(S): Air Products and Chemicals, Inc., USA
SOURCE: Eur. Pat. Appl., 13 pp.
CODEN: EPXXDW
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 930268	A2	19990721	EP 1999-300213	19990114
EP 930268	A3	19991208		
EP 930268	B1	20031203		
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO				
AU 9912096	A1	19990812	AU 1999-12096	19990114
AU 713742	B2	19991209		
US 6117916	A	20000912	US 1999-232954	19990118
NO 9900230	A	19990721	NO 1999-230	19990119
PRIORITY APPLN. INFO.:			GB 1998-1200 A	19980120

AB The invention provides an improvement in the utilization of hydrocarbon **feedstock** by partial oxidation with **oxygen** to form a **synthesis gas** comprising **carbon monoxide** and **hydrogen** and subjecting the **synthesis gas** to a conversion process comprising an exothermic reaction. The **oxygen** is provided by **air sepn.** in which the feed air is at least partially compressed by work generated by expansion of a working fluid vaporized by indirect heat exchange with at least one of the **synthesis gas** and the exothermic reaction. The improvement is that the working fluid is preheated by indirect heat exchange with adiabatically compressed feed air, thereby improving the overall efficiency of the process and reducing capital costs compared with conventional generally isothermal feed air compression. Preferably, the gas conversion process is a catalytic

hydrogenation to prepare paraffinic hydrocarbons (Fischer-Tropsch reaction), **methanol** or dimethylether.